

EXHIBIT G

California State Lands Commission Presurvey Notice Requirements for Permittees to Conduct Geophysical Survey Activities

All parts of the Presurvey Notice must be adequately filled out and submitted to the CSLC staff a minimum of twenty-one (21) calendar days prior to the proposed survey date to ensure adequate review and approval time for CSLC staff. Note that one or more of the items may require the Permittee to plan well in advance in order to obtain the necessary documentation prior to the Notice due date (e.g., permits from other State or Federal entities).

Please use the boxes below to verify that all the required documents are included in the Presurvey Notice. If "No" is checked for any item, please provide an explanation in the space provided. If additional space is needed, please attach separate pages.

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Geophysical Survey Permit Exhibit F
<input type="checkbox"/>	<input type="checkbox"/>	Survey Location (including a full-sized navigation chart and GPS coordinates for each proposed track line and turning point) Explanation: _____
<input type="checkbox"/>	<input type="checkbox"/>	Permit(s) or Authorization from other Federal or State agencies (if applicable) Explanation: _____
<input type="checkbox"/>	<input type="checkbox"/>	21-Day Written Notice of Survey Operations to Statewide Geophysical Coordinator/
<input type="checkbox"/>	<input type="checkbox"/>	U.S. Coast Guard Local Notice to Mariners/
<input type="checkbox"/>	<input type="checkbox"/>	Harbormaster and Dive Shop Notifications Explanation: _____
<input type="checkbox"/>	<input type="checkbox"/>	Marine Wildlife Contingency Plan Explanation: _____
<input type="checkbox"/>	<input type="checkbox"/>	Oil Spill Contingency Plan Explanation: _____
<input type="checkbox"/>	<input type="checkbox"/>	Verification of California Air Resources Board's Tier 2-Certified Engine Requirement Explanation: _____
<input type="checkbox"/>	<input type="checkbox"/>	Verification of Equipment Service and/or Maintenance (must verify sound output) Explanation: _____
<input type="checkbox"/>	<input type="checkbox"/>	Permit(s) or Authorization from California Department of Fish and Wildlife for surveys in or affecting Marine Protected Area(s) (if applicable) Explanation: _____

NOTE: CSLC staff will also require verification that current biological information was obtained and transmitted as outlined in Section 5 of this permit.

EXHIBIT F

PRESURVEY NOTIFICATION FORM

Applicant/Permittee's Mailing Address	Jurisdiction: Federal _____ State _____ Both _____	Date: _____
_____	If State: Permit #PRC _____	
_____	Region: _____	
_____	Area: _____	

GEOPHYSICAL SURVEY PERMIT

Check one: _____ New survey _____ Time extension of a previous survey

_____ (Applicant/Permittee) will conduct a geophysical survey offshore California in the survey area outlined on the accompanying navigation chart segment. If you foresee potential interference with commercial fishing or other activities, please contact the person(s) listed below:

FEDERAL WATERS (outside 3 nautical miles)

- 1) Applicant's representative
- 2) Federal representative (e.g., Bureau of Ocean Energy Management [BOEM] or National Science Foundation [NSF])

NOTE: Any comments regarding potential conflicts in Federal waters must be received by the Applicant's Representative and lead Federal agency within ten (10) days of the receipt of this notice.

STATE WATERS (Inside 3 nautical miles)

- 1) Permittee's representative
- 2) CSLC representative

NOTE: Any comments regarding potential conflicts in State waters should be received as soon as possible by the Permittee's representative, no more than fifteen (15) days after the receipt of this notice.

1. Expected Date of Operation _____
2. Hours of Operation _____
3. Vessel Name _____
4. Vessel Official Number _____
5. Vessel Radio Call Sign _____
6. Vessel Captain's Name _____
7. Vessel will monitor Radio Channel(s) _____
8. Vessel Navigation System _____

9. Equipment to be used_____
- a. Frequency (Hz, kHz)_____
 - b. Source level (dB re 1 μ Pa at 1 meter (m) [root mean square (rms)])_____
 - c. Number of beams, across track beamwidth, and along track beamwidth_____

 - d. Pulse rate and length_____
 - e. Rise time_____
 - f. Estimated distances to the 190 dB, 180 dB, and 160 dB re 1 μ Pa (rms) isopleths_____

 - g. Deployment depth_____
 - h. Tow speed_____
 - i. Approximate length of cable tow_____

Applicant's Representative:

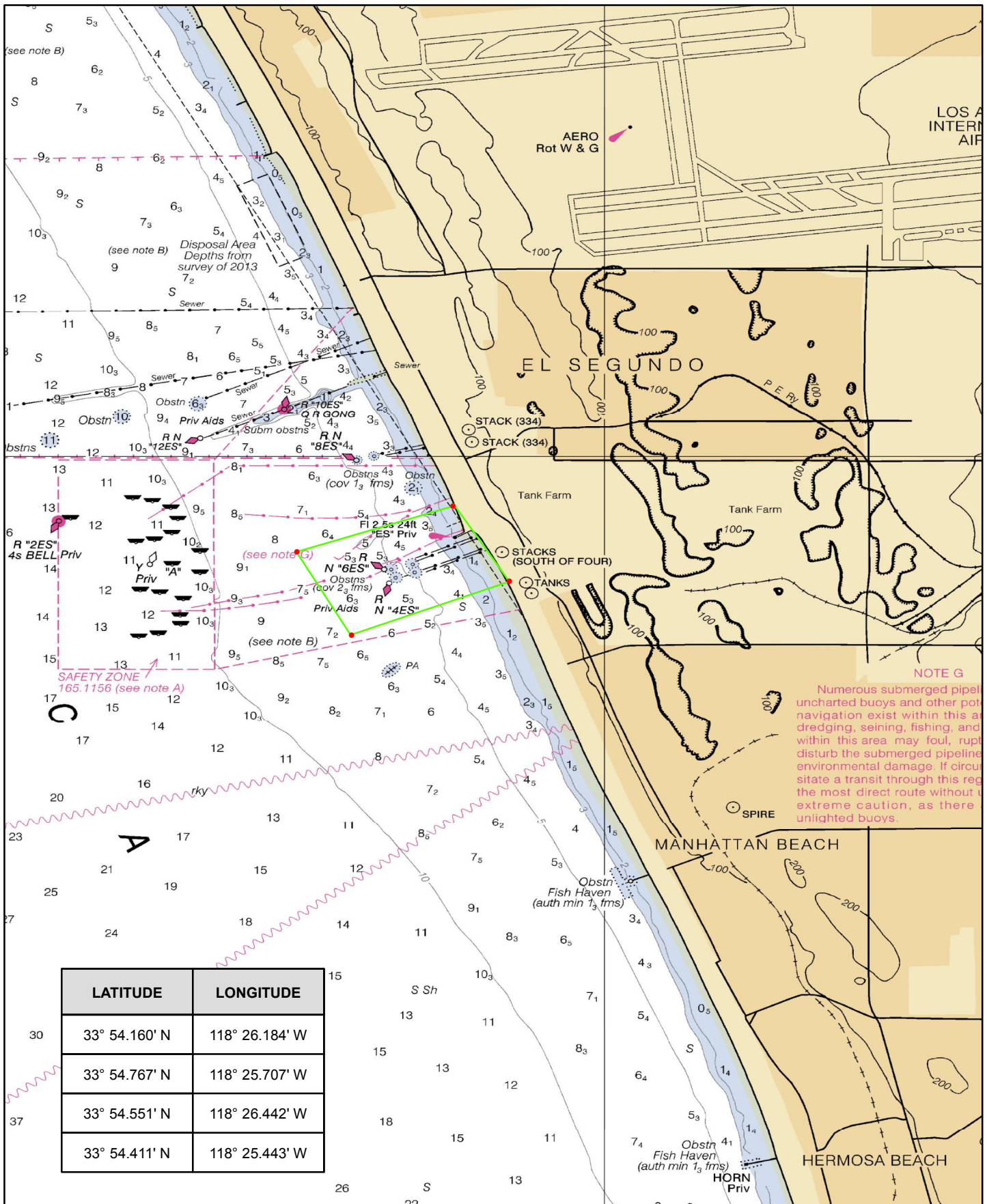
California State Lands Representative
Richard B. Greenwood
Statewide Geophysical Coordinator
200 Oceangate, 12th Floor
Long Beach, CA 90802-4331
(562) 590-5201

BOEM Representative
Joan Barminski
Regional Supervisor
Office of Strategic Resources
770 Paseo Camarillo
Camarillo, CA 93010
(805) 389-7585

Other Federal Representative (if not BOEM):

NOAA Nautical Chart 18744 with Proposed Survey Area

Side Scan Survey Notice
Offshore El Segundo, California





EdgeTech

4 Little Brook Rd., West Wareham, MA 02576

Tel: (508) 291-0057 Fax: (508) 291-2491

Email: info@edgetech.com Web: www.edgetech.com

CERTIFICATE OF CONFORMANCE

CUSTOMER: Fugro

CONTRACT / PURCHASE ORDER NUMBER: 131267

EDGETECH SALES ORDER NUMBER: SO7177

We certify that the following items have met all product requirements and sound source verification as set forth in EdgeTech's approved assembly and Factory Acceptance Test documentation.

Model/Part #: 4125 Description: Side Scan Towfish Serial #: ETN48145

Tow Fish specifications:

(Dual Frequency – 400/900 kHz or 600/1600 kHz)

Material Stainless Steel Construction

Tow Body dimensions 96 mm (3.75 in) OD, 980 mm (39 in) Length

Weight 15.4 Kg (34 Lbs) in air

(Optional weight available for deep operation)

Operating Depth 200 meters max.

Tow Speed 1-8 knots

Safety shear pin 420 Kg (930 Lbs)

Input power DC 70V, 50 watts maximum

Data link interface Ethernet, 10Mbit/s

Beam width 400 kHz Horizontal, 0.46°, All Sidelobes < -36dB

Vertical, 50°

Beam width 900 kHz Horizontal, 0.28°, All sidelobes < -36dB

Center Frequency 400 kHz/ 900 kHz

Sound Source Level: 210db//uPa

EdgeTech

Jim Allan

By: _____

Date: June 24, 2014

Digitally signed by Jim Allan
DN: cn=Jim Allan, o=EdgeTech, ou,
email=jim.allan@edgetech.com,
c=US

Date: 2014.06.24 09:19:11 -04'00'



TELEDYNE
ODOM HYDROGRAPHIC
A Teledyne Technologies Company

Date	06/23/2014
Serial #	003241

Power Supply (2417-0001-REVC)

Input Voltage (DC +24V)	✓
+12V (TP8)	✓
+24V (J3 Pin 1, 3)	✓
+5V (J3 Pin 2, 4)	✓

Communication (2416-0019-REVA)

+5V (TP2)	✓
+24V (TP1)	✓

Transceiver Board (2416-0012-REVB)

+12V (TP1)	✓
-12V (TP5)	✓
-5V (TP4)	✓
+5V (TP2)	✓

Communications

Com 1 (Depth I/O)	✓
Com 2 (Remote)	✓
Com 3 (GPS In)	✓
Com 4 (Heave)	✓
Ethernet	✓

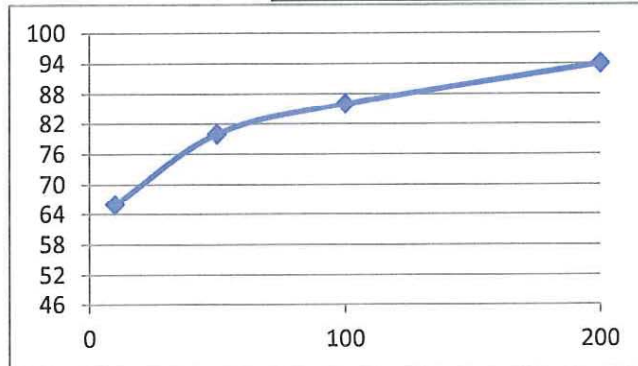
Reverse Polarity Alarm		✓
Total Burn In Time	24 Hrs Minimum	✓

ETCV100



Receiver Sensitivity

High Freq 200 KHz



High Frequency Transmit Power (50ohm)

Settings	Low (1)	Med (6)	High (12)
Ch1	16.25V	80.62V	310.90V

Board Identification	SN	SW Ver
Ethernet / Comm I/O	11278	
Communications CPU	13092	4.09
Power Supply	13091	
High Freq Transceiver	12099	1.22
High Freq DSP	12224	4.02



*Capital
Braswell
6/23/2014*

FUGRO

2015 ON-BOARD SPILL CONTAINMENT AND CLEAN-UP PLAN

THIS PLAN IS FOR FUGRO PERSONNEL TO READ *BEFORE* A SPILL OCCURS --AND TO KEEP HANDY FOR REFERENCE DURING AN EMERGENCY.

👉 **THE KEY TO SPILL PROTECTION IS *EARLY* RESPONSE AND ACTION.**

THIS PLAN IS FOR ALL EMPLOYEES ON A VESSEL OR BARGE. IT OUTLINES THE COMPANY PRIORITIES, THE LOCATION OF SPILL RESPONSE EQUIPMENT, INSTRUCTIONS ON HOW TO RESPOND, DIRECTIONS TO EMERGENCY MEDICAL FACILITIES, AND NOTIFICATION NAMES AND PHONE NUMBERS.

SPILL RESPONSE

PRIORITIES

In the event of a spill, on-site personnel are in the best position to take prompt action to minimize and control the spill.

Our company priorities are:

1. Personnel Safety
2. Prevention of Fire or Explosion
3. Elimination of Spill Source
4. Containment of the Spill
5. Collection and Storage of Contaminated Debris and Materials
6. Notification of Spillage
7. Preparation of Reports

SAFETY OF PERSONNEL IS ALWAYS OUR FIRST PRIORITY.

SPILL RESPONSE MEASURES

In case of an actual spill, take the following actions IF IT IS SAFE TO DO SO:

Call 911 for medical or fire emergency assistance if needed

Isolate and administer to injured persons if necessary

TAKE NECESSARY STEPS TO REDUCE THE RISK OF FIRE

- Turn off equipment, valves, or pumps
- Turn off or extinguish any sources of hot surfaces or flame

STOP SPILL AT SOURCE IF SAFE AND POSSIBLE

- Stop equipment leaks by crimping hoses, plugging holes, or isolating parts
- Upright turned over oil/grease or paint buckets
- Stop tank leaks by placing in additional containment or plugging hole

CONTAIN ON-DECK SPILL FROM SPREADING OVERBOARD

- Berm around spreading spill with absorbent material(rags, kitty litter, sock boom, etc)
- Apply granular absorbent("kitty litter") in sufficient quantity to soak up entire spill
- Wipe small spills with cotton rags

CONTAIN WATER-BORNE SPILLS TO AS SMALL AN AREA AS POSSIBLE

- Apply absorbent pads to spilled material
- Deploy oil boom/absorbent sock boom

☞ **IF SPILL IS LARGE, CALL THE FUGRO SUPERINTENDENT OR VICE PRESIDENT AS SOON AS POSSIBLE.**

☞ **FOR IMMEDIATE DEPLOYMENT OF LARGE OIL BOOM, CALL ONE OF THE FOLLOWING COMPANIES.**

- Clean Seas, LLC (805) 684-3838
- Marine Spill Response Corporation (MSRC) Tel: (510) 478-0702
- National Response Corporation (NRC) Tel: (562) 506-2060
- Patriot Environmental Services (562) 244-2204
- Foss Maritime or another closer response team and request response to clean up the fuel

CLEAN UP SPILL AND USED SPILL MATERIALS

- Gather soaked rags, absorbents, boom and dirt
- Place in leak proof containers for storage and disposal



EMPLOYEE TRAINING ON OIL SPILL CONTINGENCY PLAN

Prior to the departure of the vessel for any activities, all Captain and crew members on the vessel will have read the Oil Spill Contingency Plan, understand procedures to be implemented in the event of an oil spill, and know where the oil spill kit is located on the vessel.

EMERGENCY EQUIPMENT

LOCATION

As part of each job start-up safety meeting, the spill containment and cleanup material will be discussed and verified.

EQUIPMENT

The Spill Containment and Cleanup Materials include:

- 1 Box of 20 Gloves: in spill kit box located in front compartment of vessel
- 2 pair Goggles: in spill kit box located in front compartment of vessel
- 1 Box of Rags: in spill kit box located in front compartment of vessel
- 1 Box of 20 Garbage bags: in spill kit box located in front compartment of vessel
- 30 each Absorbent pads: spill kit box located in front compartment of vessel
- 1 Small Oil Boom: located on back deck
- 1 12lb Bag Granular absorbent ("kitty litter"): located in front compartment of vessel
- 1 Shovel: located on back deck

FIRE EXTINGUISHERS ARE MOUNTED ON ALL VESSELS, PICKUP TRUCKS AND THERE IS ONE IN THE OFFICE. THE FIRE EXTINGUISHER WILL BE CHECKED FOR EXPIRATION DATE AND THE LOCATION DISCUSSED AT EACH SAFETY MEETING.

INVENTORY & RESTOCKING

The on-board spill containment and cleanup materials are inventoried by the Foreman at the start of every job, at least monthly and after a spill response. Depleted items are to be reported to the Superintendent or any member of the office staff. Items are to be ordered immediately and restocked promptly.



NOTIFICATIONS

In case of a spill, notify a Fugro 24 hour representative (see addendum 1 for names and phone numbers).

GIVE THE FOLLOWING INFORMATION TO THE BEST OF YOUR ABILITY:

- Your name
- Location
- Date of spill
- Time of spill
- Substance spilled
- Quantity spilled
- Potential for continued spill
- Possible health hazard
- Source of spill
- Actions taken
- Threatened resources/utilities

THE ENVIRONMENTAL COORDINATOR WILL:

- Notify the applicable local, state and federal authorities
- Coordinate and disseminate information to the media
- Handle the legal obligations and responsibilities of the company



Addendum 1

Emergency Notification

PHONE LIST

Fugro , Inc.
Office 805-650-7000

California State Lands Commission
24-Hour Emergency Number 562-590-5201

Fire Emergency 911 911

Medical Emergency 911 911



Addendum 2

Guide for Fugro Management

1. Call for outside assistance if appropriate for the spill.
2. Call the Company Environmental and Safety Coordinator to coordinate the legal notifications and media inquiries:
3. If there is an **actual** release to the environment, the U.S. EPA Emergency Response Program requires notification to **one** of the following organizations:

NATIONAL RESPONSE CENTER	1-800-424-8802
U.S. COAST GUARD MARINE SAFETY OFFICE	1-510-437-3073
	1-510-437-3074

4. Other organizations that may be involved:

U.S. EPA Hazardous Waste	1-415-744-2000
California Office of Emergency Services	1-800-852-7550
Additional number	1-916-427-4287
State of California Water Quality	1-510-286-1255
State of California Fish & Game	1-707-944-5512
After hours and weekends	1-916-445-0045
Vessel Traffic	1-415-556-2760
Ca Oiled Wildlife Care Network	1-916-445-0045

5. The information that will be requested is attached as Addendum # 6.





Addendum 3

Fugro ,Owner, and Management Information

Fugro Environmental and Safety Coordinator

Jeffery Ripper 858-427-2017

Officers of the Corporation

Robin Villa 805-815-5812

Eddie Stutts 805-432-2213



Addendum 4

OPERATIONAL INFORMATION

NORMAL OPERATIONS

We contract with public and private entities to conduct high resolution low energy geophysical and geotechnical engineering surveys.

To accomplish this work, we purchase equipment, tools, material, and supplies which are gathered at various mobilization sites and loaded onto vessels and barges which are berthed alongside a dock. When needed tugboats move barges to and from the jobsites. At the completion of projects, the reverse process takes place - unloading equipment, materials, tools, and supplies.

POTENTIAL SPILLS DUE TO NORMAL OPERATIONS

Oil, grease, fuel, or hydraulic fluid leak from machinery or equipment

Cranes, winches, generators, light plants and boats require fluids to operate.

- Fluids could leak onto the vessel or into the water

Oil, grease, or fuel spill from storage

Oil and grease are stored in the vessels and/or barges in 5 gallon or smaller plastic buckets.

- Buckets could be dropped or punctured in transport

Fuel is stored in steel tanks housed on the vessels.

- Tanks could be punctured by sharp objects

Paint spill

Paint is generally purchased and utilized as needed. If extra is kept, one gallon pails and spray cans could be stored below deck.

- Pails could be punctured or tipped over during use



Addendum 5

PRODUCT USAGE INFORMATION

CHEMICALS AND FUELS (DESCRIPTION & QUANTITIES)

MSDS sheets are available on the vessel, and the Fugro office.

Oil	< 4 quarts
Gasoline	< 100 gallons





Addendum 6

SPILLS RESULTING FROM VESSEL FUELING

All vessel fueling will be conducted on land at a gas station or at an approved docking facility. No cross vessel fueling will be performed.



Notice of Survey Operations

**DEPARTMENT OF HOMELAND SECURITY
UNITED STATES COAST GUARD
COMMANDER, 11TH COAST GUARD DISTRICT**

Building 50-2 Coast Guard Island

Alameda, CA 94501-5100

LNМ Point of Contact

BM1 John Hinson: 510-437-2980

D11LNМ@uscg.mil

- 1. Name of Contractor:** *FUGRO*
- 2. Type of Operation:** *Side Scan Sonar and Fathometer Survey*
- 3. Location / Position Information:** *Offshore El Segundo, California (See Attached Map)*
- 4. Start and End Dates:** *Start: June 01, 2015, End: June 19, 2015*
- 5. Vessel(s) Involved (include FCC Call Sign):** *R/V Julie Ann*
- 6. Radio Yes / No, VHF Freq's Monitored:** *Yes, VHF 16*
- 7. Any other pertinent Info:** *The Julie Ann will be towing up to 100 feet of cable astern of the vessel. Operations will be conducted only during daylight hours.*
- 8. POC Name & Telephone Number(s):** *Cindy Pratt or Eddie Stutts (Fugro)
805-650-7000*
- 9. Chart Number:** *18744*

SOUTHERN CALIFORNIA-SURVEY OPERATIONS – OFFSHORE EL SEGUNDO

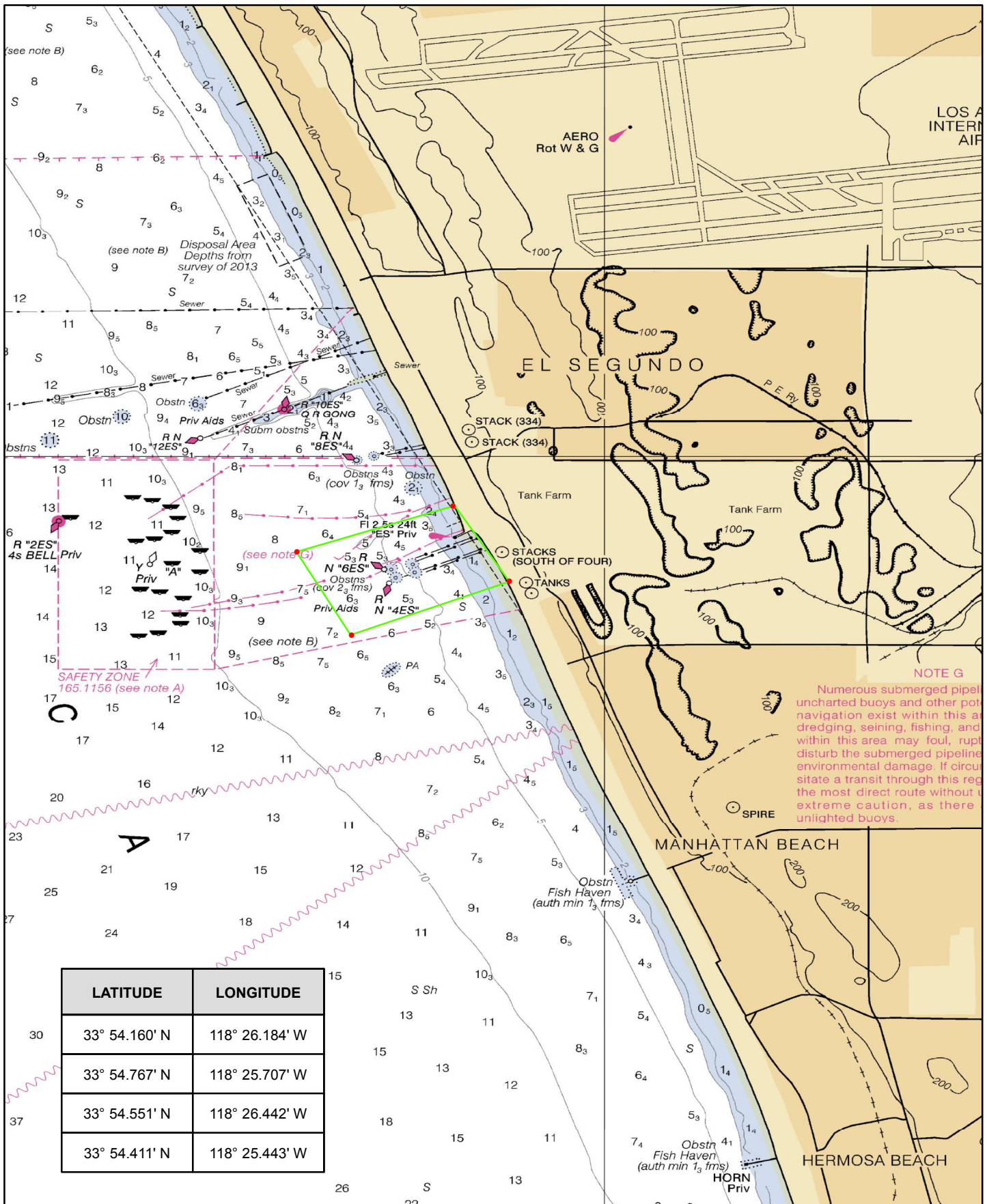
Fugro will be conducting a side scan sonar and fathometer survey from the R/V Julie Ann in the area outlined on the attached portion of Chart 18744. Operations will last approximately 2 days and be carried out between June 1 and June 19, 2015 during daylight hours only. The R/V Julie Ann will be towing up to 100 feet of cable during mapping operations. The survey area is outlined by the following coordinates.

LATITUDE	LONGITUDE
33° 54.160' N	118° 26.184' W
33° 54.767' N	118° 25.707' W
33° 54.551' N	118° 26.442' W
33° 54.411' N	118° 25.443' W

The vessel will have limited maneuverability during operations and mariners are advised to use due caution when transiting in the area. For more details or comments contact Eddie Stutts or Cindy Pratt at 805-650-7000.

NOAA Nautical Chart 18744 with Proposed Survey Area

Side Scan Survey Notice
Offshore El Segundo, California



MARINE WILDLIFE CONTINGENCY PLAN

BATHYMETRIC AND SIDE SCAN SONAR SURVEYS NRG EL SEGUNDO GENERATION STATION OTC INTAKE AND DISCHARGE UNITS 1-4 OFFSHORE EL SEGUNDO, CALIFORNIA

Prepared for:

FUGRO PELAGOS, INC.
4820 McGrath St. Suite 100
Ventura, California 93003

Prepared by:

Padre Associates, Inc.
369 Pacific Street
San Luis Obispo, California 93401

May 2015

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APPENDICES

APPENDIX A: MARINE WILDLIFE MONITOR RESUMES

1.0 INTRODUCTION

This Marine Wildlife Contingency Plan (MWCP) has been developed for Fugro Pelagos, Inc., (Fugro) in support of bathymetric and side scan sonar survey along NRG El Segundo Generation Station's Once Through Cooling (OTC) intake and discharge units 1 through 4, offshore of El Segundo, California (Figure 1). This MWCP has been prepared in accordance with the requirements in the existing California State Lands Commission (CSLC) issued geophysical and geologic sampling permit No. 8391.9. This MWCP is designed to reduce or eliminate adverse impacts to marine wildlife resources within the survey area.

This MWCP is specific to the equipment and activities that are proposed for the survey. The proposed monitoring and mitigations have been successfully used in agency-approved MWCPs for similar offshore surveys in southern California marine waters, and have been shown to be effective in reducing or eliminating potential impacts to marine mammals and turtles.

1.1 PURPOSE AND OBJECTIVES

The proposed survey will utilize a single beam bathymetry and side scan sonar system to document the seafloor conditions within the survey area. The survey will be completed by Fugro in accordance with requirements specified by NRG's statement of work.

1.2 PROPOSED SURVEY ACTIVITIES AND AREA

The survey is anticipated to take one day and will utilize Fugro's survey vessel (SV) *Julie Ann*, a 7.9 meter (m) (26 foot [ft]) survey vessel designed specifically for hydrographic surveying. The vessel will be mobilized in Marina Del Rey Harbor and will transit to the survey area on the morning of the survey. The survey will be completed during daylight hours (no nighttime operations are proposed). The vessel will return to the Marina Del Rey Harbor at the completion of the survey.

The proposed survey area is located within state waters with depths ranging from as close to inshore to approximately 235 m (50 ft). Data will be collected within a survey corridor width of approximately 229 m (750 ft) to the north of intake 1 and 2 and 229 m (750 ft) south of discharge 3 and 4 (Figure 2).

1.3 SURVEY EQUIPMENT

Fugro proposes to use the following equipment to collect the required data:

- Single Beam Bathymetry System: The single beam system will consist of an Odom CV100, and a sound Velocimeter.
- Side Scan Sonar System: The side scan system will consist of an Edgetech 4125 dual frequency digital side scan sonar system with acquisition software.
- Trimble Differential GPS System (DGPS).

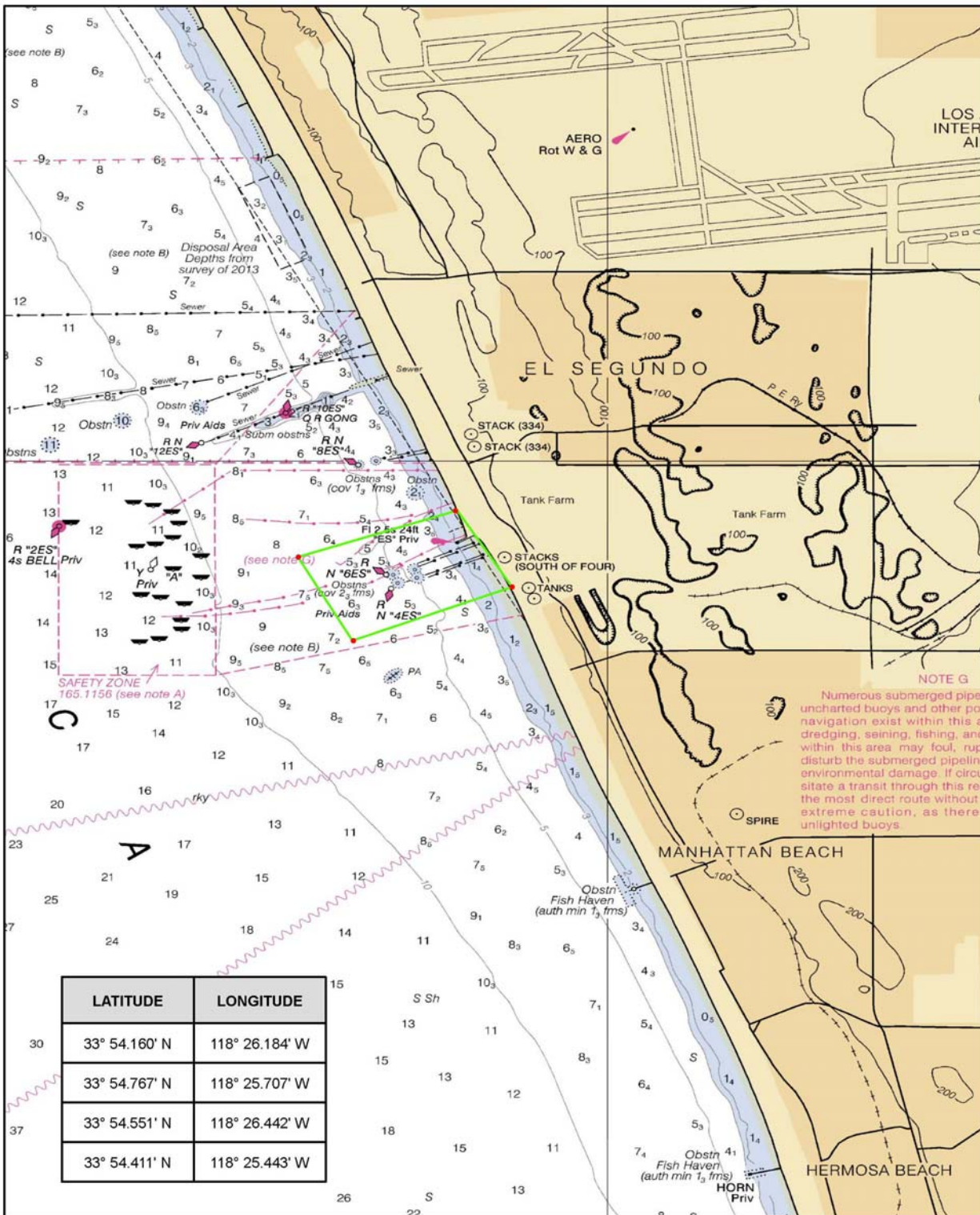


Figure 1. Project Area

2.0 MARINE WILDLIFE

Multiple species of marine turtles, cetaceans (whales, dolphins, and porpoises), pinnipeds (seals and sea lions), and fissipeds (sea otter) have been recorded along the Southern California coast (Table 2.1). Most of the recorded species can occur within the survey region, although seasonal abundances of these taxa vary; pinnipeds and some dolphins are year-round residents (Table 2.2). Other species are migratory, such as the gray whale (*Eschrichtius robustus*), or seasonal, such as the blue and humpback whales (*Balaenoptera musculus* and *Megaptera novaeangliae*, respectively) and therefore are more abundant during specific months. Within the project region, resident, seasonal, and migrant taxa could be expected to occur.

Table 2.1. Abundance Estimates for Marine Mammals and Reptiles within Southern California (California/Mexico Border to Point Conception)

Common Name Scientific Name	Population Estimate	Current Population Trend
REPTILES		
Cryptodira		
Olive Ridley turtle <i>Lepidochelys olivacea</i>	1.1 million (Eastern Tropical Pacific DPS)	Stable
Green turtle <i>Chelonia mydas</i>	20,112 (Eastern Pacific DPS)	Stable
Loggerhead turtle <i>Caretta caretta</i>	7,138 (California)	Decreasing
Leatherback turtle <i>Dermochelys coriacea</i>	361 (California)	Decreasing
MAMMALS		
Mysticeti		
California gray whale <i>Eschrichtius robustus</i>	18,017 (Eastern North Pacific Stock)	Fluctuating annually
Fin whale <i>Balaenoptera physalus</i>	2,589 (California/Oregon/Washington Stock)	Increasing off California
Humpback whale <i>Megaptera novaeangliae</i>	1,876 (California/Oregon/Washington Stock)	Increasing
Blue whale <i>Balaenoptera musculus</i>	1,551 (Eastern North Pacific Stock)	Unable to determine
Minke whale <i>Balaenoptera acutorostrata</i>	202 (California/Oregon/Washington Stock)	No long-term trends suggested
Northern Pacific right whale <i>Eubalaena japonica</i>	31 (based on photo-identification) (Eastern North Pacific Stock)	No long-term trends suggested
Sei whale <i>Balaenoptera borealis</i>	83 (Eastern North Pacific Stock)	No long-term trends suggested
Odontoceti		
Short-beaked common dolphin <i>Delphinus delphis</i>	343,990 (California/Oregon/Washington Stock)	Unable to determine
Long-beaked common dolphin <i>Delphinus capensis</i>	76,224 (California Stock)	Unable to determine
Dall's porpoise <i>Phocoenoides dalli</i>	32,106 (California/Oregon/Washington Stock)	Unable to determine
Pacific white-sided dolphin <i>Lagenorhynchus obliquidens</i>	21,406 (California/Oregon/Washington Northern and Southern Stock)	No long-term trends suggested
Risso's dolphin <i>Grampus griseus</i>	4,913 (California/Oregon/Washington Stock)	No long-term trends suggested

Table 2.1. Abundance Estimates for Marine Mammals and Reptiles within Southern California (California/Mexico Border to Point Conception)

Common Name Scientific Name	Population Estimate	Current Population Trend
Short-finned pilot whale <i>Globicephala macrorhynchus</i>	465 (California/Oregon/Washington Stock)	No long-term trends suggested
Striped dolphin <i>Stenella coeruleoalba</i>	8,231 (California, Oregon, Washington)	No long-term trends suggested
Baird's beaked whale <i>Berardius bairdii</i>	466 (California, Oregon, Washington)	No long-term trends suggested
Cuvier's beaked whale <i>Ziphius cavirostris</i>	4,481 (California, Oregon, Washington Stock)	No long-term trends suggested
Mesoplodont beaked whales	389 (California, Oregon, Washington)	No long-term trends suggested
Bottlenose dolphin <i>Tursiops truncatus</i>	684 (California/Oregon/Washington Offshore Stock)	No long-term trends suggested
	290 (California Coastal Stock)	No long-term trends suggested
Northern right whale dolphin <i>Lissodelphis borealis</i>	6,019 (California/Oregon/Washington Stock)	No long-term trends suggested
Sperm whale <i>Physeter macrocephalus</i>	751 (California/Oregon/Washington Stock)	No long-term trends suggested
Dwarf sperm whale <i>Kogia sima</i>	Unknown (California, Oregon, Washington)	No long-term trends suggested
Pygmy sperm whale <i>Kogia breviceps</i>	271 (California/Oregon/Washington Stock)	No long-term trends suggested
Killer whale <i>Orcinus orca</i>	162 (Eastern North Pacific Offshore Stock) 354 (West Coast Transients)	No long-term trends suggested
Pinnipedia		
California sea lion <i>Zalophus californianus</i>	153,337 (U.S. Stock)	Unable to determine; increasing in most recent three year period
Northern fur seal <i>Callorhinus ursinus</i>	6,431 (California - San Miguel Island Stock)	Increasing
Guadalupe fur seal <i>Arctocephalus townsendi</i>	3,028 (Mexico Stock) Undetermined in California	Increasing
Northern elephant seal <i>Mirounga angustirostris</i>	74,913 (California Breeding Stock)	Increasing
Pacific harbor seal <i>Phoca vitulina richardsi</i>	26,667 (California Stock)	Stable
Fissipedia		
Southern sea otter <i>Enhydra lutris nereis</i>	2,944**	Unable to determine





Source: Allen, 2011; NMFS, 2015a,b; and USGS, 2015

* Estimates are based on known data of the population of nesting females for eastern Pacific Distinct Population Segments.

** Estimate provided by USGS, 2015

Table 2.2. California Marine Wildlife Species and Periods of Occurrence within Southern California (California/Mexico Border to Point Conception)

Family Common Name	Month of Occurrence ⁽¹⁾											
	J	F	M	A	M	J	J	A	S	O	N	D
REPTILES												
Cryptodira												
Olive ridley turtle (T) ⁽²⁾												
Green turtle (T) ⁽²⁾												
Leatherback turtle (E) ⁽²⁾												
Loggerhead turtle (T) ⁽²⁾												
MAMMALS												
Mysticeti												
California gray whale												
Blue whale (E)												
Fin whale (E)												
Humpback whale (E)												
Minke whale												
Sei whale (E)												
Northern right whale (E)												
Odontoceti												
Dall's porpoise												
Short-beaked common dolphin												
Long-beaked common dolphin												
Pacific white-sided dolphin												
Risso's dolphin												
Short-finned pilot whale												
Bottlenose dolphin												
Northern right whale dolphin												
Sperm whale												
Dwarf sperm whale												
Pygmy sperm whale												
Baird's beaked whale												
Cuvier's beaked whale												
Mesoplodont beaked whales												
Killer whale												
Pinnipedia												
Northern fur seal ⁽³⁾												
Guadalupe fur seal												
California sea lion												
Northern elephant seal ⁽⁴⁾												
Pacific harbor seal												
Fissipedia												
Southern sea otter (T) ⁽⁵⁾												

Rare with uniform distribution		Not expected to occur due to seasonal distribution		More likely to occur due to seasonal distribution		Present Year Round	
(E)	Federally listed endangered species.						
(T)	Federally listed threatened species.						
(1)	Where seasonal differences occur, individuals may also be found in the "off" season. Also, depending on the species, the numbers of abundant animals present in their "off" season may be greater than the numbers of less common animals in their "on" season.						
(2)	Only a small percent occur over continental shelf (except near San Miguel rookery, May-November).						
(3)	Common near land during winter breeding season and spring molting season.						
(4)	Only nearshore (diving limit 100 feet).						

Sources: Bonnell and Dailey, 1993; NMFS, 2015a,b; and NCCOS, 2007; and Allen, 2011

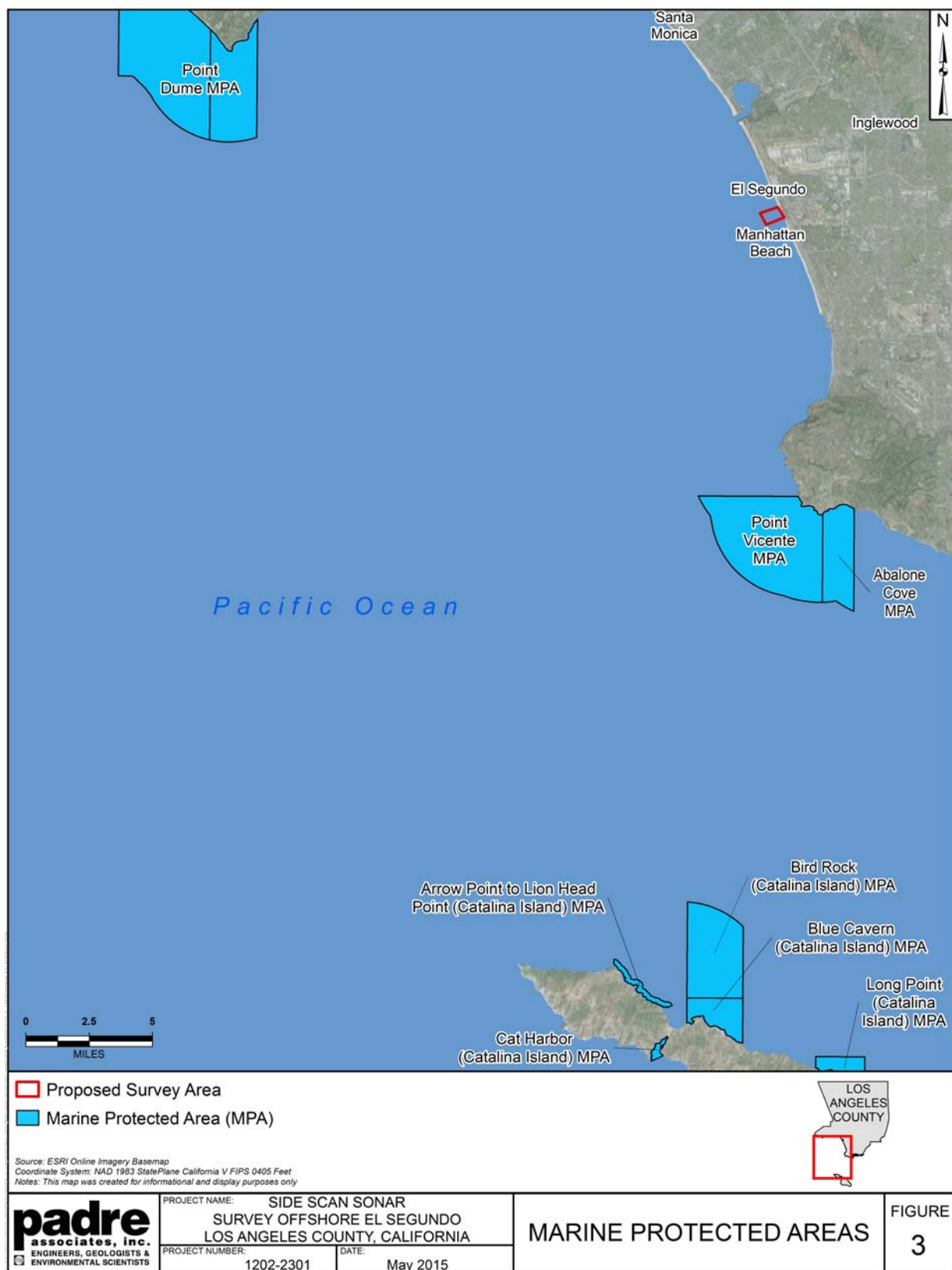
2.1 PINNIPED HAUL-OUTS AND ROOKERIES

The proposed Project activities will not occur near any known pinniped haul-out and/or rookeries (Figure 2). The closest haul-out/rookery is located on Santa Catalina Island approximately 50 kilometers (km) [31 miles (mi)] south of the active nearshore Project area.



3.0 MARINE PROTECTED AREAS

The proposed survey area does not fall into a designated Marine Protected Area (MPA). Point Vicente MPA (Figure 3) is the closest MPA, located approximately 17 km (km) [10.5 mi] south of the survey area.



4.0 ONBOARD MONITORING AND OTHER MITIGATIONS

4.1 VESSEL TRANSIT

Following mobilization, the survey vessel will transit between Marina Del Rey Harbor and the survey area. During vessel transit to and from the survey area, there is a potential for encountering marine wildlife and therefore onboard monitoring will occur. A qualified marine wildlife monitor (approved by NOAA Fisheries and/or experienced in marine wildlife observations – refer to Appendix A for monitor qualifications) will be onboard the vessel throughout the period of the vessel transit and data collection activities.

During transit periods, a marine wildlife monitor will be positioned on the vessel so that the monitor will have a clear view of the area of ocean that is in the direction of the course of travel. That monitor will observe marine mammals and turtles (marine wildlife) and will institute measures to avoid potential collisions with those animals. To minimize the chance of collision with or disturbance of marine mammals and turtles, the vessel will maintain a minimum distance of 91 m (300 ft) from marine wildlife in accordance with CSLC-issued geophysical and geologic sampling permit. If the marine wildlife monitor should observe a marine mammal or reptile within the path of the transiting vessel, the monitor will immediately report that observation to the vessel operator who will, unless those actions will jeopardize the safety of the vessel or crew, slow the vessel and/or change course in order to avoid contact.

When whales are in the survey area and/or are observed proximal to the vessel during transit periods the vessel operator will observe the following guidelines:

- Maintain a minimum distance of 100 m (330 ft) from sighted whales;
- Refrain from crossing directly in front of or across the path of sighted whales;
- Transit parallel to whales and maintain a constant speed that is not faster than the whale's speed;
- Avoid positioning the vessel in such a manner to separate a female whale from her calf;
- Do not use the vessel to herd or drive whales; and
- If a whale engages in evasive or defensive action, slow the vessel and move away from the animal until the animal calms or moves out of the area.

4.2 FISHING GEAR CLEARANCE

In addition to submitting the required Notice to Mariners that will alert commercial fishers of pending on-water activities prior to the start of each survey day, the vessel will traverse the proposed survey corridor to note and record the presence of deployed fishing gear. The type and location of fishing gear (buoys) will be noted, and the California Department of Fish and Wildlife (CDFW) Southern District Enforcement Office will be contacted. No survey lines will be completed within 30 m (100 ft) of any observed fishing gear. The survey crew will not remove or

relocate any fishing gear; removal or relocation will only be accomplished by the owner or by an authorized CDFW agent (Table 4.1).

Table 4.1. Fishing Gear Contact Information

Enforcement Dispatch Desk California Department of Fish and Wildlife, Southern District	California Department of Fish & Wildlife, Marine Division
(562) 598-1032	(831) 649-2870

4.3 SURVEY MONITORING

Three days prior to the initiation of the survey, Padre marine scientists will contact NOAA Fisheries Long Beach office staff and local private whale-watching operations to acquire information on the recently-observed composition and relative abundance of marine mammals offshore El Segundo and the surrounding area. That information will be conveyed to the vessel operator and crew prior to departure for the survey area.

The onboard monitor is responsible for observations during vessel transit will also be responsible for monitoring during the data collection efforts. Monitoring will be completed by a monitor using binoculars while located at a high vantage point onboard the survey vessel. As specified in the CSLC-issued geophysical and geologic sampling permit a safety zone is not required for any equipment operating at 200 kilohertz or greater.

During survey activities, the onboard monitor will observe for marine mammals when survey equipment is operating. At the time of equipment start-up, marine mammals/reptiles within the project area will be noted. If any animals show behavioral changes during equipment start-up, either the equipment will be shut down until the animal(s) move out of the area, or after 15 minutes of the animal(s) remaining in the project area, the equipment will be “ramped up” to full power. With the incorporation of this measure and the other mitigation measures discussed below, the proposed offshore survey activities are unlikely to have a high potential to injure and/or disturb marine wildlife.

The onboard monitor will have the authority to recommend halting data collecting operations if a mammal or turtle is observed within the project area, and is reacting to the survey-generated activities. The monitor will also have the authority to recommend continuation or cessation of operations during periods of limited visibility based on the observed abundance of mammals and/or reptiles. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation will be completed by the onboard monitor.

4.4 MITIGATION MEASURES

The following operation-related actions will be implemented in accordance with CSLC permit requirements:

1. Survey operator shall use a “soft start” technique at the beginning of survey activities each day (or following a shutdown) to allow any marine mammal that may be in the

- project area to leave before the sound sources reach full energy. The survey operator will initiate each piece of equipment at the lowest practical sound level, increasing the output no greater than six (6) decibels (dB) per 5-minute period;
2. During operations, if an animal's actions are observed to be "irregular" the monitor will have the authority to recommend the cessation of data collection until the animal moves out of the project area. If the behavior is observed, the equipment will be shut-off and will be restarted and ramped-up to full power or will not be started until the animal(s) is/are outside of the project area;
 3. The monitor will have the authority to recommend halting data collecting operations if a large concentration of diving birds/sea birds is observed in the immediate vicinity; and
 4. Unless the safety of the vessel or crew would be in jeopardy, avoidance measures instituted during vessel transit will be implemented during geophysical data collection as well.

With the incorporation of the mitigation measures presented in this document, the proposed offshore survey activities are unlikely to cause injury and/or disturb marine wildlife.

5.0 RECORDING AND REPORTING PROCEDURES

5.1 OBSERVATION RECORDING

The onboard monitor will record observations on pre-printed forms and will photodocument observations whenever possible. The completed forms will be used as the primary data sources for the post-survey report (see Section 5.3 below) which will be provided to the CSLC and/or other agencies if requested.

5.2 COLLISION RESPONSE

If a collision with marine mammal or reptile occurs, the vessel operator must document the conditions under which the accident occurred, including the following:

- Location (latitude and longitude) of the vessel when the collision occurred;
- Date and time of collision;
- Speed and heading of the vessel at the time of collision;
- Observation conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog) at the time of collision;
- Species of marine wildlife contacted (if known);
- Whether an observer was observing for marine wildlife at the time of collision; and
- Name of vessel, vessel owner/operator (the company), and captain or officer in charge of the vessel at time of collision.

If a collision occurs, the vessel should stop, if safe to do so. However, the vessel is not obligated to stand by and may proceed after confirming that it will not further damage the animal by doing so. The vessel will then communicate by radio or telephone all details to the vessel's base of operations (Table 5.1).

Table 5.1. Collision Contact Information

Federal	State	State
Justin Viezbicke Stranding Coordinator National Marine Fisheries Service Long Beach, California (562) 980-3230	Enforcement Dispatch Desk California Department of Fish and Wildlife Los Alamitos, California (562) 598-1032	California State Lands Commission Division of Environmental Planning and Management Sacramento, California (916) 574-0748

The Marine Mammal Protection Act (MMPA) requires that collisions with or other Project-related impacts to marine wildlife will be reported promptly to the National Marine Fisheries Service (NMFS) Stranding Coordinator. From the report, the NMFS Stranding Coordinator will coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate.

From the vessel's base of operations, a telephone call will be placed to the National Marine Fisheries Service West Coast (California) Stranding Coordinator in Long Beach, to obtain instructions. Alternatively, the vessel captain may contact the NMFS Stranding Coordinator directly using the marine operator to place the call or directly from an onboard telephone, if available to:

National Marine Fisheries Service
West Coast Stranding Coordinator
501 West Ocean Blvd, Suite 4200
Long Beach, CA 90802
(562) 980-3230
Contact: Justin Viezbicke

Email: justin.viezbicke@noaa.gov

It is unlikely that the vessel will be asked to stand by until NMFS or CDFW personnel arrive; however, this will be determined by the NMFS Stranding Coordinator. According to the MMPA, the vessel operator is not allowed to aid injured marine wildlife or recover the carcass unless requested to do so by the NMFS Stranding Coordinator.

Although NMFS has primary responsibility for marine mammals in both state and federal waters, the CDFW will also be advised that an incident has occurred in state waters affecting a protected species.

5.3 MONITORING REPORT

A technical report will be prepared documenting the project activities, observations of marine wildlife, and a summary of encounters with any marine mammals and/or turtles, and subsequent actions taken during the survey. The report will be submitted to Fugro within two weeks of completion of field data collection. Fugro will then submit the monitoring report to the appropriate agencies.

6.0 REFERENCES

- Allen, S., Mortenson, J., and Webb, S.. 2011. Field Guide to Marine Mammals of the Pacific Coast: Baja, California, Oregon, Washington, British Columbia. University of California Press. Berkeley and Los Angeles, California.
- Bonnell, M.L., and Dailey, M.D.. 1993. Ecology of the Southern California Bight: A Synthesis and Interpretation. Berkeley, CA: University of California Press.
- National Marine Fisheries Service. 2015a. Marine Mammal Stock Assessment Reports by Species. Website: <http://www.nmfs.noaa.gov/pr/sars/species.htm>. Updated February 25, 2015 accessed on April 24, 2015.
- National Marine Fisheries Service 2015b. Status of Marine Turtles Website: <http://www.fisheries.noaa.gov/pr/species/turtles/> Updated March 30, 2015 accessed on April 2, 2014.
- NOAA National Centers for Coastal Ocean Science (NCCOS). 2007. A Biogeographic Assessment off North/Central California: In Support of the National Marine Sanctuaries of Cordell Bank, Gulf of the Farallones and Monterey Bay. Phase II - Environmental Setting and Update to Marine Birds and Mammals. Prepared by NCCOS's Biogeography Branch, R.G. Ford Consulting Co. and Oikonos Ecosystem Knowledge, in cooperation with the National Marine Sanctuary Program. Silver Spring, MD. NOAA Technical Memorandum NOS NCCOS 40. 240 pp.
- U.S. Geological Survey, 2014. Spring 2014 Mainland California Sea Otter Survey Results. Website accessed online at: <http://www.werc.usgs.gov/ProjectSubWebPage.aspx?SubWebPageID=24&ProjectID=91> on January 23, 2015.

APPENDIX A

MARINE WILDLIFE MONITOR RESUMES

Resume 2014

Jennifer Klaib

Marine Biologist/Biologist

EDUCATION: **B.S. Aquatic Biology (Marine Emphasis)**
University of California – Santa Barbara, 2006.

QUALIFICATIONS:

- Biological Surveying and Monitoring
- Biological Resource Surveys/Reports
- Contingency Plans
- Restoration and Mitigation Plans
- Permit Compliance Monitoring
- Permit Applications
- Agency Communications
- Off-Shore Marine Mammal Monitoring
- Wildlife Rescue and Relocation

Ms. Klaib joined Padre Associates, Inc. in 2006. As a marine biologist with Padre she has experience in environmental assessments of coastal and offshore development projects, monitoring of construction impacts on biological resources, and in the permitting of coastal projects. Ms. Klaib is responsible for biological surveys, permit compliance monitoring, contingency plans, permit applications, environmental sensitivity trainings, sensitive species surveys, water quality sampling, and wildlife rescue and relocation.

Ms. Klaib has also worked for the Marine Science Institute at the University of California – Santa Barbara where she participated in subtidal and rocky intertidal field research associated with long-term monitoring of biological resources on the Channel Islands and in San Diego County. She also has 6 years of supervisory experience in marine mammal rescue and rehabilitation with the Santa Barbara Marine Mammal Center.

**MARINE PROJECT
EXPERIENCE
SUMMARY:**

Ms. Klaib has over 2,000 hours of offshore monitoring experience and is a NOAA Fisheries-qualified marine mammal monitor. Ms. Klaib was responsible for monitoring the effects of construction on marine mammals and turtles during geophysical surveys throughout the California coast, for the PG&E deep seismic surveys offshore Point Buchon, during the installation of pile-supported piers at South Bay Boat Yard in San Diego Bay, and during the replacement of a power cable offshore of Carpinteria. Ms. Klaib has also participated in aerial surveys off the central coast of California. She has logged 40 hours of aerial observations of marine mammals and reptiles.

Ms. Klaib has participated in construction monitoring activities for the Calleguas Municipal Water District Hueneme Outfall Replacement Project, AT&T AAG Fiber Optic Cable Project, the US Coast Guard Floating Dock Repair Project (San Diego Sector), Fifth Avenue Landing/Water Transportation Center Marina Enhancement Project and during the installation of pile-supported piers at South Bay Boat Yard in San Diego Bay. She was responsible for monitoring the effects of construction on

Resume 2014

marine mammals, turtles and marine avifauna. Ms. Klaib also participated in turbidity monitoring activities for the later projects and for the PG&E pipeline remediation project in the Sacramento and San Joaquin rivers (delta region), ensuring permit compliance. She has also participated in post-construction monitoring of the recovery of surf grass (*Phyllospadix spp*) at the decommissioned Cojo Marine Terminal near Point Conception.

Prior to joining Padre Associates, Ms. Klaib participated in field studies that included monitoring of the effects of demolition of offshore oil and gas facilities in Santa Barbara Channel on fish, marine mammals and birds. The involvement included the collection and identification of fish species as well as recording aerial and shipboard observations of marine mammals.

ENVIRONMENTAL DOCUMENTATION:

Ms. Klaib's NEPA experience includes preparation of technical sections for environmental assessment documents for a proposed liquefied natural gas facility off the coast of California; for a proposed marina expansion; and for a proposed hydrogen gas pipeline between the cities of Martinez and Benicia in the Carquinez Straits area of San Francisco Bay. She has also participated in the preparation of permit applications and application support packages for shipyard and marina expansion projects in San Diego Bay.

Ms. Klaib's experience in CEQA projects includes preparation of environmental documents consisting of mitigated negative declarations (MND), initial studies, environmental assessments, monitoring reports, technical reports and environmental impact reports (EIR).

Ms. Klaib has experience in the development of monitoring plans, including the observation and reporting protocols that focus on the documentation of marine operations, oil spill prevention, and marine mammal and bird mitigation compliance.

BIOLOGICAL OPINIONS / PERMITS:

CDFG Scientific Collecting Permit (No. SC-11935) authorizing *capture and release* of marine fishes, and marine/tidal invertebrates. This permit also authorizes the salvage of marine aquatic plants.

CDFG Scientific Collecting Permit (No. SC-12730) authorizing *sacrifice* of marine aquatic plants, and marine/tidal invertebrates.

CERTIFICATIONS:

Certified SCUBA Diver (SSI, 2002)
Certified AAUS Research Diver (2003)
Certified *Caulerpa* Survey Specialist (2008)
40-Hr. Hazardous Waste Certification (HAZWOPER)
1st Aid, CPR, and Oxygen Administration Certified (Bi-annual Refresher)
Offshore Survival/Helicopter Underwater Egress *Training* (H.U.E.T) (2008)
NOAA Basic Aviation and Aviation Health Safety Course (2012)
Confined Space Attendant and Entrant
San Ardo/Coalinga – EHS Site Specific Orientation.
Smith System Defensive Driving Course.

Michaela Hoffman

Staff Biologist

EDUCATION:

B.S. Biology, Concentration: Marine Science and Fisheries

California Polytechnic State University, San Luis Obispo, 2009

QUALIFICATIONS:

- Biological Surveying and Monitoring
- Biological Resource Surveys/Reports
- Marine Wildlife Contingency Plans
- Essential Fish Habitat Assessments
- Offshore Marine Wildlife Observer
- Wildlife Rescue and Relocation

Ms. Hoffman is a staff biologist and is responsible for mitigation monitoring of protected species offshore, preparing permit applications, wildlife contingency plans and resource assessments. Primarily, she is responsible for monitoring various geophysical surveys offshore San Luis Obispo and Santa Barbara counties. Ms. Hoffman joined Padre Associates, Inc. in 2011. Prior to joining Padre, her experience consisted of both research-based and hands-on experience with marine wildlife.

OFFSHORE EXPERIENCE:

Ms. Hoffman's offshore experience includes over 150 hours while onboard the Navy Marine Mammal Program (NMMP) training vessels, as well as experience on a research boat for California Polytechnic State University. While with the NMMP in 2007, she was responsible for record keeping, care of working animals, and general crew duties. In 2008-2009, she participated in water quality research while studying at Cal Poly San Luis Obispo and has experience with small vessel operations within Morro Bay, California. Her responsibilities included navigating shallow water channels using GPS, monitoring for wildlife, and maintenance of instruments.

Ms. Hoffman has more than 1,000 hours of experience monitoring marine wildlife and is a National Oceanic and Atmospheric Administration (NOAA) qualified marine mammal monitor. She was responsible for monitoring marine mammals, reptiles, and avifauna during pipe replacement projects in the Dos Cuadras oil field in the Santa Barbara Channel and in the Beta Unit offshore Long Beach, California. Ms. Hoffman was also responsible for monitoring wildlife during the PG&E 3D geophysical surveys offshore San Luis Obispo county in 2011 and 2012, and the cable and seismometer deployments in 2013.

ENVIRONMENTAL DOCUMENTATION:

Ms. Hoffman has experience preparing marine wildlife contingency plans and incidental harassment assessments for high-energy offshore geophysical surveys, oil and gas pipe replacements, and marine terminal decommissioning projects. Ms. Hoffman has also prepared vessel oil spill contingency plans and essential fish habitat assessments for various marine projects. She has also assisted in the preparation of biological resource sections for CEQA documents such as environmental impact reports (EIRs), and mitigated negative declarations (MNDs).

MARINE WILDLIFE HANDLING:

Ms. Hoffman worked with the NMMP in San Diego, California where she had responsibilities in both animal husbandry and acoustical research with California sea lions and Atlantic bottlenose dolphins. Ms. Hoffman also has experience in marine mammal rehabilitation at the Marine Mammal Center in Morro Bay, California and Wolf Hollow Rehabilitation Center on San Juan Island, Washington. Her responsibilities included transporting sick and injured animals, and providing medical aid for federally protected species such as California sea lions, Pacific harbor seals, northern elephant seals, fur seals, and southern sea otters.

CERTIFICATIONS:

Certified SCUBA Diver, PADI 2008
40-Hr. Hazardous Waste Certification (HAZWOPER), 2011
CPR/AED and First Aid Certified, 2011
STCW Certified Personal Survival Techniques, Cal Maritime Academy, 2011

BIOLOGICAL WORKSHOPS:

Taxonomy and Ecology of Branchiopods of California and Oregon,
December 2012. Presented by Christopher Rogers
Fairy Shrimp of California Identification Course, March 2013. Presented
by Mary S. Belk.

VOLVO PENTA AQUAMATIC DUOPROP

AD41P/DP

6-cylinder, 4-stroke, direct-injected turbocharged marine diesel engine with aftercooler and Duoprop drive. 147 kW (200 hp)*

* Crankshaft power according to ISO 8665

Reliable marine engine

AD41P is a reliable and economic marine engine with considerable power resources, developed for planing craft. With its compact dimensions, it is excellent for twin installation.

Direct injection

Direct injection (DI) results in a low thermal load and low fuel consumption compared with swirl chamber engines (IDI) with the same cylinder capacity.

Turbocharging

The engine is turbocharged with an exhaust-driven turbocompressor. More air can be forced into the cylinder in this way with the result that more fuel can be injected and the engine runs more efficiently. Since combustion takes place in a turbo engine with excess air, the exhaust gases are cleaner than in a naturally-aspirated engine.

The turbo also acts as an additional silencer both on the induction side and on the exhaust side.

Aftercooler

The air heats up and expands when it is compressed. In other words, it takes up more space. The aftercooler cools the compressed and heated air and raises its oxygen content so that the engine can use the fuel more efficiently.

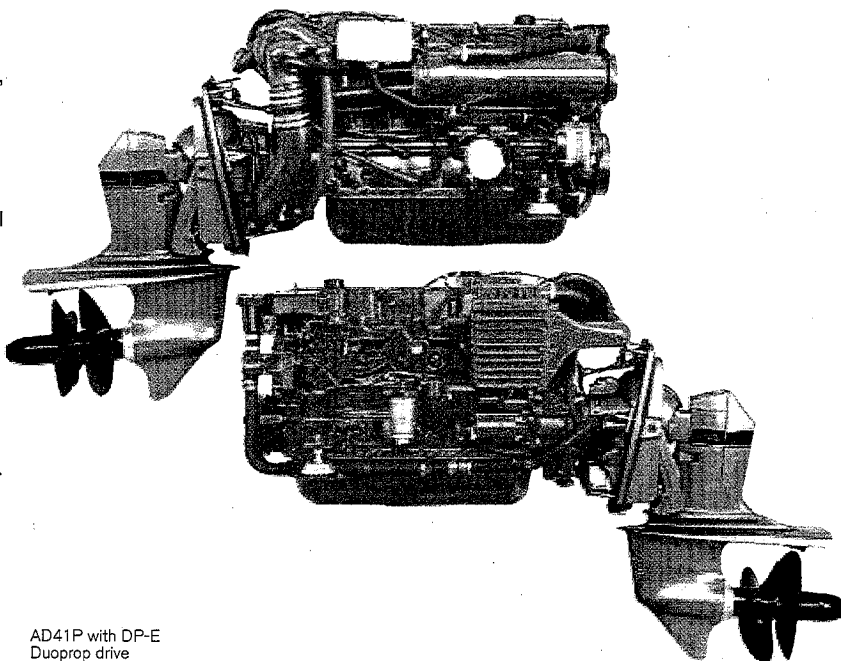
Low exhaust emission levels

The direct injection, turbocharging and aftercooler contribute to minimizing noxious exhaust emissions and enhancing overall enjoyment of boating. The engine is certified according to SAV, IMO and IMO US/EPA.

DP drive

The DP drive with its twin counter-rotating propellers produces a harmonious drive unit with unbeatable characteristics in the boat in terms of speed, acceleration and fuel economy.

It also produces less noise and vibrations, better steering and maneuvering characteristics, better grip in the water and a shorter time to planing compared with single propeller systems.



AD41P with DP-E
Duoprop drive

The drive features standard power steering for maximum driving comfort.

Comprehensive service network

Volvo Penta has a well-established network of authorized service dealers in more than 100 countries throughout the world. These service centers offer Genuine Volvo Penta Parts as well as skilled personnel to ensure that you enjoy the best possible service.

Technical description:

Engine and block

- Cylinder block and cylinder head made of cast iron for good corrosion resistance and long service life
- Oil-cooled pistons with two compression rings and one oil scraper ring
- Replaceable wet cylinder liners
- Replaceable valve seats
- Seven-bearing crankshaft

Engine mounting

- Flexible mounting which provides sound and vibration insulation. The engine has two adjustable rubber mounts in front of the engine

and rubber suspension between flywheel housing and transom shield

Lubrication system

- Pressure lubrication system with easily replaced full-flow oil filter on the side of the engine
- Tubular oil cooler that can be cleaned

Fuel system

- Rotor-type injection pump with a mechanical governor for accurate speed control
- Smoke limiter
- Fine filter with water separator
- Feed pump with hand primer
- Electrically-operated stopping device

Air inlet and exhaust system

- Inlet system designed to produce optimal air rotation which provides perfect combustion. This results in high power and low fuel consumption.
- Air inlet silencer with replaceable filter
- Closed crankcase vent system
- Seawater-cooled exhaust elbow of cast iron with a stainless steel insert
- Complete connection for exhaust outlet through the drive
- Exhaust-driven freshwater-cooled turbo-charger

VOLVO PENTA

AD41P/DP

Cooling system

- Thermostatically regulated freshwater cooling
- Tubular heat exchanger with separate transparent expansion tank
- Gear-driven seawater pump with rubber impeller
- Coolant system prepared for hot water outlet
- Seawater strainer

Electrical system

- 12V corrosion-protected electrical system, complete with instrumentation
- 14V/60A marine alternator
- Charging regulator with battery sensor for voltage drop compensation
- The alternator is prepared for a bulkhead-mounted double-diode set which automatically distributes the charge current to two separate battery circuits
- Automatic fuse with manual reset
- Starter motor power 3.0 kW
- Extension cable harness with plug-in connection available in various lengths

Instrument panel:

Separate instruments and harness or complete panel fitted with:

- Key switch
- Temperature gauge
- Instrument lighting
- Alarm for temperature, oil pressure and charging
- Voltmeter
- Rev counter
- Hour meter
- Oil pressure gauge
- Alarm test

Drive

- Complete with transom shield, flywheel cover and installation components
- The drive can be tilted up by 42°
- Protective zinc anodes prevent corrosion
- The coolant water inlet at the front of the drive provides a reliable coolant water supply to the engine
- Built-in kick-up function to reduce possible damage, in the event the drive strikes an underwater object

Power Trim

- Power Trim is an electrically-operated hydraulic system for trimming the drive angle

while in use. The actual trim angle is indicated with five LEDs and a digital display on the CD Trim instrument

- An analog instrument is also available

Accessories

An extensive range of accessories for:

- Fuel system
- Cooling system
- Control system
- Steering system
- Instruments
- Electric system
- Comfort & Safety
- Propeller & Drive
- Maintenance

For detailed information, please see Accessory catalogues.

Contact your local Volvo Penta dealer for further information.

Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

The engine illustrated may not be entirely identical to production standard engines.

Technical Data

Engine designation.....	AD41P
Crankshaft power, kW (hp)	147 (200)
Propeller shaft power, kW (hp).....	139 (189)
Engine speed, rpm.....	3800
Displacement, l (in ³)	3.6 (219)
Number of cylinders	6
Bore/stroke, mm (in.).....	92/90 (3.62/3.54)
Compression ratio	17.5:1
Volvo Penta Duoprop drive	DP-E
Ratio.....	1.95:1 ¹⁾ (and 1.78:1)
Dry weight with DP, incl. prop., kg (lb)	538 (1186)

Duty rating: R5-R3

¹⁾ R5 only

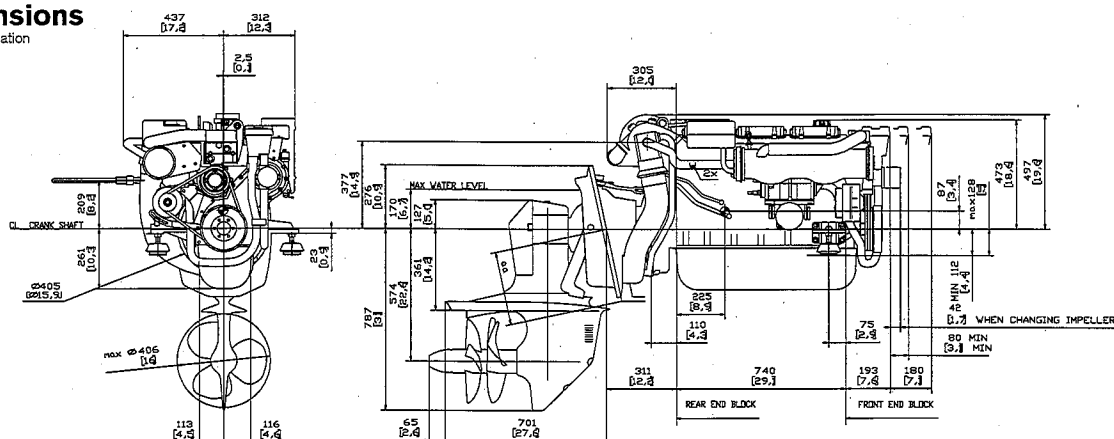
Technical data according to ISO 8665. Fuel with a lower calorific value of 42,700 kJ/kg and density of 840 g/liter at 15°C (60°F). Merchant fuel may differ from this specification which will influence engine power output and fuel consumption.

N.B. The product can also be used in an application with a higher rating than stated, e.g. R3 can be used for R4 or R5.

The engine is certified according to SAV, IMO and IMO US/EPA.

Dimensions

Not for installation



VOLVO PENTA

AB Volvo Penta
SE-405 08 Göteborg, Sweden
www.volvopenta.com

[Reply](#) [Reply All](#) [Forward](#)

Pre-survey notification

Villegas, Bradi FPI [BVillegas@fugro.com]

To: scuba@ecodivecenter.com

Cc: [Pratt, Cynthia FPI \[cpratt@fugro.com\]](mailto:cpratt@fugro.com); [Stutts, Eddie FPI \[Estutts@fugro.com\]](mailto:Estutts@fugro.com); Tim.Sisk@nrg.com

Attachments: [7131_CSLCnotification.pdf \(2 MB\)](#) [Open as Web Page]

Tuesday, May 12, 2015 3:37 PM

Good afternoon,

Per our geophysical notification requirements by California State Lands Commission (CSLC), I am submitting to you the attached notice for posting.

Please contact me if you have any questions or require further information.

Thank you and have a great day!

Bradi

Kind regards,
Fugro Pelagos, Inc

Bradi Villegas
Administrative Assistant Marine Survey Ventura

T+805-289-3849 | F+805-658-6679
bvillegas@fugro.com | www.fugro.com
4820 McGrath St. Suite 100, Ventura, CA 93003, USA

[Reply](#)[Reply All](#)[Forward](#)

Pre-survey notification

Villegas, Bradi FPI [BVillegas@fugro.com]

To: community@portla.org

Cc: [Pratt, Cynthia FPI \[cpratt@fugro.com\]](mailto:cpratt@fugro.com); [Stutts, Eddie FPI \[EStutts@fugro.com\]](mailto:Estutts@fugro.com); Tim.Sisk@nrg.com

Attachments:  [7131_CSLCnotification.pdf \(2 MB\)](#) [[Open as Web Page](#)]

Tuesday, May 12, 2015 3:38 PM

Good afternoon,

Per our geophysical notification requirements by California State Lands Commission (CSLC), I am submitting to you the attached notice for posting.

Please contact me if you have any questions or require further information.

Thank you and have a great day!

Bradi

Kind regards,
Fugro Pelagos, Inc

Bradi Villegas
Administrative Assistant Marine Survey Ventura

T+805-289-3849 | F+805-658-6679
bvillegas@fugro.com | www.fugro.com
4820 McGrath St. Suite 100, Ventura, CA 93003, USA

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Pre-survey notification

Villegas, Bradi FPI [BVillegas@fugro.com]

To: harbor@cityoflongbeachms.com

Cc: [Pratt, Cynthia FPI \[cpratt@fugro.com\]](mailto:cpratt@fugro.com); [Stutts, Eddie FPI \[EStutts@fugro.com\]](mailto:Estutts@fugro.com); Tim.Sisk@nrg.com

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bvillegas@fugro.com | www.fugro.com
4820 McGrath St. Suite 100, Ventura, CA 93003, USA

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Pre-survey notification

Villegas, Bradi FPI [BVillegas@fugro.com]

To: dive@ScubaDiveLA.com

Cc: [Pratt, Cynthia FPI \[cpratt@fugro.com\]](mailto:cpratt@fugro.com); [Stutts, Eddie FPI \[EStutts@fugro.com\]](mailto:Estutts@fugro.com); Tim.Sisk@nrg.com

Attachments: [7131_CSLCnotification.pdf \(2 MB\)](#) [[Open as Web Page](#)]

Tuesday, May 12, 2015 3:36 PM

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Fugro Pelagos, Inc

Bradi Villegas
Administrative Assistant Marine Survey Ventura

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